

Plans to Search for New Particles Decaying to Dijets at CMS

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Abstract

The Compact Muon Solenoid (CMS) is one of two multi-purpose detectors which is located on the Large Hadron Collider (LHC) at CERN. We use a generated pseudo-data sample corresponding to 10 pb^{-1} of integrated luminosity at a pp collision energy of 10 TeV to test CMS plans to search for new particles decaying to two high energy jets (dijets). By construction the measured dijet mass spectrum agrees with the QCD prediction. Applying our search to this pseudo-data sample, we set upper limits on the cross section for dijet resonances. This analysis shows that CMS will be sensitive to new particles decaying to dijets, and if we measured this pseudo-dataset produced from QCD alone, we would exclude at 95% confidence level the following new particles: axiglouons and flavor universal colorons with mass below 1.8 TeV , excited quarks with mass below 1.8 TeV and E_6 diquarks with mass below 1.0 TeV and mass between 1.3 TeV and 1.7 TeV .